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GUIDELINES FOR MICROCOMPUTER USAGE

IN THE GOVERNMENT OF ALBERTA

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GUIDELINES FOR MICROCOMPUTER USAGE

IN THE GOVERNMENT OF ALBERTA

SYSTEMS MANAGEMENT AND COORDINATION BRANCH

COMPUTER SYSTEMS DIVISION

INFORMATION SERVICES

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1.0 MICRO COMPUTERS

Introduction

These guidelines are intended as an aid to departments in the formulation of their own standards and guidelines.

Inexpensive, yet powerful, multifunctional microcomputers with a wide choice of software products that can be used quickly and easily by novice users are being promoted by vendors as the answer to many problems faced by managers. In spite of their affordability and ease of use, the acceptance of microcomputers has resulted in two major concerns regarding these devices. First, they are proliferating rapidly and, if order and control are absent, major problems requiring expensive solutions can develop. Second, the impact of these devices on an organization can eventually be enormous and requires full consideration to ensure a net benefit will result.

This guideline outlines suggested measures to ensure that the acquisition and utilization of microcomputers takes place within well defined departmental microcomputer policies.

Appendix 'A' is a skeleton microcomputer policy which could be applicable to many departments. While each department will wish to address its specific concerns and reflect its own management philosophies in formulating its microcomputer policy, departments may find the skeleton useful as a good starting point and as a guide.

2.0 GENERAL PRINCIPLES

All microcomputers, whether used as personal computers, for word processing or for other uses, fall within the purview of TBD 04/84.

Microcomputers are considered within the perspective of overall departmental use and management of EDP.

Today's microcomputer technology offers opportunities for improved efficiencies and productivity gains in many areas. Departments will therefore find some experimentation in the use of microcomputers useful, but this experimentation must take place in an orderly fashion within the framework of departmental policies.

3.0 THE NEED FOR DEPARTMENTAL ACTION

The relatively low cost of microcomputers has been used to argue that microcomputer acquisitions should be free of controls of any kind. While that approach might be defensible on a small scale, experience has shown that this view ignores a number of important considerations.

3.1 The True Cost Of Microcomputers

The initial cost of a microcomputer is only a small part of its ultimate true cost to the department. Additional expenses have been found by experience to be from 2 to 6 times the initial cost of the hardware. These expenses include training (including the cost of employee time while on training), additional software, additional peripherals, additional furniture and office space, charges for access to public data bases, work to provide the appropriate telecommunications infrastructure, work required to make mainframe data accessible to microcomputer users, the provision of advisory services, arrangements for back-ups, maintenance, and additional costs for subsequent physical moves.

Compatibility and the capability of integrating the micro initiatives into both the departments' and central agencies' systems and networks are important considerations that should be dealt with early in the planning stages. This is necessary in order to ensure that the equipment will be utilized to its full potential and to avoid redundant capital investment as departmental requirements change.

3.2 Concerns Regarding The Security And Integrity Of Information

As with conventional paper records, information on computer storage media must be carefully indexed, filed, and protected. It is important that the reliability, integrity and security of the data stored in microcomputers be maintained. This is particularly true for information entered directly into these computers and not duplicated elsewhere. The policies and practices developed in this area regarding mainframe/mini computer data processing need to be adapted and applied in the context of microcomputers.

3.2 Concerns Regarding The Security And Integrity of Information (cont'd)

Corporate information needs can be compromised by the improper use of microcomputers for end-user computing. If managers can satisfy their own requirements with their microcomputers, they may only give secondary attention to the department-wide systems, thus inadvertently undermining the need for information at the departmental executive level.

3.3 Providing Continuity

The need for adequate documentation of microcomputer based operational systems is not always recognized with the result that the continuity of the function could be seriously threatened when the originators leave the organization.

3.4 The Impact On Employees And Organization

Managers should consider all potential implications resulting from the introduction of microcomputers into an office so that anticipated benefits are not cancelled out by unforeseen problems. The impact of microcomputers on employees' work habits, quality of work and job functions, and on the organization, and also the potential for job displacement, job change, etc., all need to be considered before acquisition. It is important that employees are fully informed and participate, as applicable, so that fears do not develop based on misinformation.

3.5 The Need To Provide Training

Although a good case can be made for controlled experimentation, there is also a risk of inexperienced users in many areas duplicating efforts and "re-inventing the wheel". Inexperienced users tend to overestimate the expected benefits while underestimating the effort required to enter large amounts of data into the computer and the amount of training required to be able to perform effective data retrieval and generate reports. It is not uncommon for disillusioned users who do not receive adequate support to give up trying to use their microcomputers after a few months of frustration.

4.0 PRACTICES

4.1 Departmental Policies

Departments should develop a departmental microcomputer policy as an extension of present EDP policy which should be included in the annual EDP Plan submitted to Treasury and PWSS.

4.2 Planning

All microcomputers and associated peripherals and software should be identified in the departmental EDP plans and are subject to the general government monitoring guidelines outlined in Chapter 5 of the EDP Practices and Guidelines.

4.3 Inventories And Acquisition Plans

Departments should maintain a microcomputer hardware/software inventory as part of their overall computer inventory and should, via their annual EDP plan, provide annual acquisition plans and summary statistics on actual acquisitions and applications, as per current Treasury and PWSS reporting instructions.

4.4 Acquisition of Microcomputers and Associated Software

All acquisitions of microcomputers and associated software must be performed through the Contracted Services Branch of Public Works, Supply and Services.

4.5 Departmental Compliance

Departments should sensitize all managers to the existence of their policies and should audit, as part of their internal audit program, practices for the acquisition and usage of microcomputers to ensure compliance with these policies. Departments should provide Treasury and PWSS with the results of these audits upon request.

4.6 Senior Management Responsibility

Departments should ensure that the responsibility for the approval and promulgation of the departmental microcomputer policy and the annual microcomputer acquisition plans is assigned at a senior level to ensure a department-wide perspective in the policy and plans.

4.7 Establishment Of Control Points

Departments should identify focal points for departmental approval of individual microcomputer acquisitions who are responsible for ensuring the adherence with the departmental policy.

4.8 Justification Of The Acquisitions

Departments should ensure that, depending upon the type of acquisition (e.g. pilot project or systematic implementation), studies addressing the cost-benefit, compatibility with other equipment, productivity pay-backs and impacts are carried out prior to the acquisition of microcomputers. Departments should also ensure that the extent of these studies is reasonable for the expenditure involved, keeping in mind that the ultimate cost may be 2 to 6 times the initial investment, that the acquisition may be only the first of several for that office and that the acquisition should be supportive of departmental productivity enhancement programs.

4.9 End-User Programming

Departments should prepare guidelines for users on the expected level of end user programming, especially in programming languages such as BASIC. It is not generally cost effective for users to devote extensive time to programming their applications. Professional programmers should be responsible for such programming while users employ the microcomputer as a tool to assist them in their function. The use of software packages should be encouraged and the duplication of software development must be minimized. Turnkey (i.e. ready to use) application software should be supplied to non expert users whenever possible.

4.10 Documentation Of Operational Systems

Departmental standards should stipulate the documentation required for continuing operational uses of microcomputers to ensure continuity of use of the application, data security and data integrity.

4.11 Departmental Standards For Interconnection

Departments should develop, as applicable, standards for intercommunication between microcomputers, networks (public and private) and the department's central data bases and systems to ensure mutual compatibility. Although microcomputers may be purchased as stand-alone units, all such acquisitions should conform to these standards (i.e. the question of interconnection should be examined), not just those initially identified as linked together.

Departments should advise the PWSS Telecommunications Division early in the planning process when many transmissions using microcomputers are being considered so that the impact on existing networks can be assessed.

4.12 Alternatives To Microcomputers

Departmental microcomputer acquisition planning and approval procedures should be sufficiently comprehensive to identify related acquisition (e.g. those which are part of a network or used for similar functions in many offices) and to ensure that these are treated as systems in the normal process of managing EDP and telecommunications in the departments including the consideration of reasonable alternatives to stand alone microcomputers.

4.13 User Training And Support

Departments should provide for adequate user training and technical support either through internal information centres, central Information Services offerings or contracted private sector services.

4.14 Impact On Employees

Departments should prepare guidelines to ensure that all potential impacts of the introduction of microcomputers on employees are fully considered, that employees are fully informed of microcomputer acquisition plans and that ergonomics are considered.

4.15 Security

Departments should ensure that adequate security provisions are put in place and maintained for all micro-based applications for both equipment software and data. These provisions should recognize the likely lack of knowledge and expertise in this type of security in user areas should also reference license agreements, copyrights, etc.

5.0 GUIDELINES

The following guidelines should be included by departments and agencies in their internal policies as appropriate.

5.1 Priority To Productivity Improvement Projects

Departmental procedures should give priority to proposed acquisitions promising definite productivity improvements in terms of reduced resources, measurable improvements in approved service levels, or offsets to justifiable future resource requirements. Subsequent reviews of implementation should ascertain that these improvements were achieved or should identify the reason why they were not achieved. These experiences should be fed back into the department's planning and approval process, including budgetary incentives or constraints, as required.

5.2 Transfer Of Knowledge Among Employees

Departments should develop procedures to allow knowledge of microcomputers and software products gained by employees to be transferred to other employees. Where size warrants, departments may find it appropriate to set up a small microcomputer advisory/training group to provide this function; otherwise, an expert user should be appointed as a coordinator. Other departments may contact Information Services of PWSS who will assist in locating sources of expertise. In order to facilitate the training and sharing of expertise, departments may wish to standardize or restrict the range of microcomputer products that may be acquired in the department, and may wish to establish user computer areas and Information Centres.

5.3 Involvement Of The EDP And Telecommunications Communities

The EDP and telecommunications communities have acquired considerable expertise in many areas common to both large computers and microcomputers such as telecommunications (including electronic mail), data management, data security, software, standards and documentation. This expertise should be used to solve microcomputer issues. In particular, they have the knowledge to consider alternatives which can achieve cost savings, operational benefits and minimize risks of failure.

5.4 Management Of Risk

In developing policies and in establishing departmental standards and procedures, departments should recognize that microcomputers represent a continually changing technology, and should provide an environment which encourages creativity and where some experimentation can be fostered. However, to counter the risks implicit in this approach, departments should maintain an overall perspective of microcomputer implementations and review these after a fixed period so that the equipment from unsuccessful projects can be recycled, and an overall direction may evolve and be developed.

Appendix A

A Policy

for the Acquisition and Use of

Microcomputers and Intelligent Workstations

NOTE: This is an EXAMPLE ONLY. and should be modified as required to reflect departmental management philosophy (e.g. with respect to the amount of decentralization of control) and individual circumstances.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to define the policies and procedures for acquisition and use of microcomputers and their related software.

The main objectives of these policies and procedures are:

(a) to take advantage of the opportunities offered by advances in technology and to utilize microcomputers and related equipment as efficiently, effectively and economically as possible in situations which will result in productivity gains;

(b) to establish and maintain a corporate base of expertise in the area of microcomputers, and ensure that microcomputers are integrated into the corporate information technology strategy; and

(c) to increase end-user self-reliance by building up their expertise in the area of microcomputers.

(ADD OTHER DEPARTMENTAL OBJECTIVES)

2.0 SCOPE

The policies and procedures specified in this paper will apply to all acquisitions and uses of microcomputers within the Department.

(NOTE: ADJUST THE LIST AS REQUIRED FOR COMPATIBILITY WITH OTHER DEPARTMENTAL POLICIES, E.G. REPROGRAPHIC EQUIPMENT.)

2.1 Areas Included:

Included in this scope are the following (regardless of application or location of use):

- personal computers
- multipurpose workstations
- all word processing equipment
- CAD/CAM and other graphics workstations
- all associated peripherals and software
- services for micros such as maintenance, training and consulting.

2.2 Areas Excluded:

Specifically excluded from this policy are:

- calculators
- electronic typewriters
- copiers
- facsimile equipment
- computer and office automation furniture

3.0 BACKGROUND

3.1 Historical Perspective

(SET THE SCENE AS TO THE STATUS OF THE DEPARTMENT IN RELATION TO THE TECHNOLOGY)

3.2 Potential Benefits of Microcomputers

Microcomputers provide important benefits to any organization because of:

1. the relatively low cost of a micro configuration which can usually be justified by a single application, and also minimizes the risk associated with some experimentation and imaginative use of the equipment provided that the success of such projects is reviewed after a fixed period;

2. the ease of installation and use with no special physical environment necessary;

3. the ready availability of hardware and a wide variety of software which eliminates the long lead times associated with larger scale systems;

4. the capability to act as a terminal to corporate mainframes and minis as well as outside databases;

5. the fact that micros can be used for specialized and ad-hoc requirements, thus relieving central computing power to be used more consistently for corporate applications.

3.3 Areas of Caution

Although microcomputers can provide an important part of the computing power of an organization, there are associated issues that must be considered:

1. micros are often purchased in isolation without an analysis to match the device to the intended application, and if purchases by uninformed users may result in poor results;

2. micro data files that are the property of one person or group become inaccessible to others, and there is a risk that, without some sort of clearing house for applications, highly paid professionals will duplicate the work of others;

3. without proper documentation of applications the security and integrity of data is often jeopardized and the investment is lost if trained personnel leave;

4. uncontrolled purchases lead to a range of incompatible microcomputers increasing the difficulty of support from a central group and resulting in problems if communication among micros becomes necessary; the microcomputer industry does not, in general, provide the high level of backup and maintenance support that can be expected from the larger computer suppliers;

5. the initial cost of a microcomputer is only a small part of its ultimate full cost, the associated cost for training, additional software and peripherals, furniture, office space, communications, access charges, etc., are often overlooked;

6. the impact of micros on employees' work habits, quality of work and job functions and on the organization is often not considered.

4.0 DEPARTMENTAL POLICIES

4.1 Microcomputer equipment and software are defined as a departmental resource and as such planning and coordination of equipment will be performed centrally by a Microcomputer Control Group in the EDP division.

4.2 It is the policy of the Department to acquire commercial, "packaged" or "off the shelf" microcomputer hardware, peripherals, system software and applications software whenever possible. Custom solutions will be developed only as a last resort.

4.3 Microcomputer hardware supported by the Department on a standard basis will have the capability of being used as multi-function equipment e.g. must have the potential to include communications capability to other mainframes and micros so that it can serve a range of uses such as data entry, workstation or standalone application facility.

4.4 The Microcomputer Control Group will provide support and service to a standard list of hardware and software. Items outside this list should be discussed with the Central Group prior to acquisition to determine support required.

4.5 The implementation of all microcomputer systems will be developed using approved departmental standards. This will serve to ensure that systems are developed to include effective documentation, training, backup, security etc., to ensure continuity of operation.

4.6 It is the policy of the Department that, in order to protect licencing agreements, no external software may be copied for use on a machine other than that for which it was acquired.

5.0 ROLES AND RESPONSIBILITIES

5.1 End-Users

End-users of microcomputer systems will be responsible for defining their business needs, developing and implementing their systems and for the ongoing operation of their systems. Specific responsibilities are as follows:

1. Acquisition

   Responsibility for defining their business needs within the context of their Functional Plans and the Annual EDP plans recommending a solution and quantifying the benefits for an automated solution.

2. Development

   Where "off the shelf" software is recommended, responsibility for developing the specific application use of that software.

   Responsibility for supplying resources for and ensuring the successful implementation of the microcomputer system. This will be done following the relevant standards which includes all required documentation to be produced.

   Responsibility for designing, developing and coding systems used on their equipment.

Responsibility for the acceptance testing of the application and procedures of the proposed system, and for ensuring they all work effectively in the operational environment.

3. Support

Responsibility for the ongoing management and operation of their microcomputer system, including system operation, physical environment and security, staffing, scheduling, operation, documentation and archiving, on the spot problem solving, system integrity (e.g. balancing), and ordering (through departmental channels) of supplies.

Responsibility for developing and providing all application specific training for their environment (both startup and ongoing).

5.2 The Microcomputer Control Group - EDP Division

The Microcomputer Control Group will provide end-users with a central pool of knowledge and expertise to be used in the development and support of microcomputer-based and other EDP systems. They will be responsible for providing a range of support services to end users in such areas as requirements analysis, system development methodology, hardware and software evaluation, acquisition, training and demonstration facilities and testing. They will also be responsible for departmental planning, acquisition, operational guidelines, standards and general training in regard to microcomputers. Specific responsibilities are as follows:

1. Acquisition

Responsibility for the acquisition, and disposal of all micro related equipment (Hardware).

Responsibility for compiling information on planned microcomputer acquisitions for inclusion in the Annual EDP plan for both internal and external (i.e. Treasury, PWSS) use.

Responsibility for the maintenance of an inventory of all EDP equipment and software used throughout the Department.

2. Development

Responsibility for ensuring that the technical solution proposed (hardware, software and application) conforms to departmental guidelines and is the most suitable in terms of type, size, workload etc., for meeting the problem.

Responsibility for ensuring that "packaged" or "off the shelf" systems and application software are used wherever possible and that "custom" system developments are used only as a last resort.

Where a custom solution is approved, responsibility for ensuring that the user has the relevant expertise and for advising on design and programming aids and techniques to be used.

3. Support

Responsibility for developing, promulgating and maintaining a departmental policy for microcomputer usage.

Responsibility for preparing management and operational guidelines on the use of computers.

Responsibility for the provision and support of an integrated computer/communications environment within the department including the introduction and integration of microcomputer technology.

Responsibility for establishing a centre of expertise in the acquisition and use of microcomputers and related equipment.

Responsibility for recommending or providing training courses and facilities for the general use of microcomputer equipment and software.

Responsibility for developing and maintaining a microcomputer centre which will provide the department with:

- access to installed and portable microcomputer equipment
- a facility for demonstrations and training
- a test centre for technology trials in new microcomputer hardware and software.

Responsibility for planning, developing and implementing general purpose, across-the-board hardware and software to benefit a larger cross-section of departmental users.

Encourage and support the formation of informal users groups.

Responsibility for the dissemination of relevant information on microcomputer technology.

6. APPROVALS

6.1 Approval of Microcomputer Acquisitions

Approvals for microcomputer acquisitions is obtained by following the procedures:

(DETAILS OF PROCEDURES, IDENTIFYING FOCAL POINTS)

6.2 Approval of Supplies and Services

All supplies for microcomputer usage, i.e., paper, diskettes, ribbons, etc., and requirements for service will be obtained from Material Management using existing approval authorities and procedures. Should any item not be available as a standard item the request should be passed to the Microcomputer Control Group who will determine the acquisition approach to be used.

(ADJUST TO SUIT DEPARTMENTAL CIRCUMSTANCES)